

THE DWARF GAULTHERIAS IN CALIFORNIA

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The two dwarf Gaultherias, *Gaultheria humifusa* (Graham) Rydb. and *Gaultheria ovatifolia* A. Gray, of the Northwest are rare in California, being locally distributed in Humboldt and Del Norte counties in the northwestern part of the state and in a few localities in the High Sierra. They have been collected only rarely, so it is not surprising that the presence of both species within our state boundaries has been overlooked, or that the two species have been confused.

In order to help clear up the record on these two interesting dwarf shrubs the following diagnostic characters and distribution notes are offered: Both species are readily separated from the common salal, *Gaultheria shallon* Pursh, not only by their low dwarf habit and smaller leaves but by well marked floral differences. Their flowers are campanulate and solitary in the upper axils on short bracted peduncles, and the filaments are glabrous. Whereas in the salal the flowers are urceolate and arranged in elongated, many-flowered, terminal or sub-terminal racemes, and the filaments are hairy.

Calyx glabrous; leaves oval, about 10 mm. long or the larger often 15 mm. long, entire or obscurely serrulate.....*G. humifusa*

Calyx pubescent; leaves ovate or subcordate, 20-40 mm. long, distinctly serrulate*G. ovatifolia*

GAULTHERIA HUMIFUSA (Graham) Rydb. Alpine Spicy Wintergreen. *Vaccinium humifusum* Graham, Edinb. New Phil. Journ. 11:193. 1831. *Gaultheria myrsinites* Hook. Fl. Bor. Am. 2:35. 1834. *Gaultheria humifusa* Rydb. Mem. N. Y. Bot. Gard. 1:300. 1900.

Low shrub with creeping stems, the branches mostly less than 10 cm. high, slender, glabrous or puberulent. Leaves oval to round-oval, or rarely ovate-oval, the larger rarely over 15 mm. long, obtuse at apex, obtuse or rounded at base, entire or obscurely serrulate; petioles very short; flowers solitary in the leaf axils, on short bracted peduncles; calyx 2.5 to 3 mm. long, and nearly as broad, toothed to near the middle, glabrous; corolla slightly exceeding the calyx-lobes; fruiting calyx enlarged forming a fleshy berry-like fruit, 5-7 mm. in diameter, scarlet, and spicy-flavored.

Grows on moist mossy slopes or on the edges of wet meadows, mainly in the Hudsonian Zone, near timberline. The general geographical range is from British Columbia and Alberta to Colorado and California. In California the species has been collected only twice to my knowledge: once by Mrs. M. Strong Clemens in the Granite Basin, Kings River region, July 1910, and again by Peirson, No. 2530, in

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Grouse Meadows, LeConte Cañon, Aug. 13, 1921. Both of these stations are in the southern Sierra Nevada.

GAULTHERIA OVATIFOLIA A. Gray. Oregon Spicy Wintergreen. *Gaultheria ovatifolia* A. Gray. Proc. Amer. Acad. 19: 84. 1883.

Low shrub with procumbent stems and erect or ascending branches, seldom over 15 cm. high, the branchlets, petioles and calyx pubescent with loosely spreading hairs. Leaves ovate to broadly ovate, the larger 20-25 mm. long, acute at apex, abruptly rounded or subcordate at base, distinctly serrulate; flowers solitary in the leaf axils, on short bracted peduncles; calyx 3 mm. high, the lobes exceeding the tube, acute; corolla campanulate, 3.5 mm. long, white; berry globose 4-5 mm. in diameter, scarlet, spicy-flavored.

This species inhabits the coniferous forests of the Humid Transition and Canadian Life zones. The general geographical distribution extends from British Columbia to northern Idaho and southward on the Pacific Slope to the Siskiyou Mountains of southern Oregon and northern California. The following collections from California have been examined: head of Redwood Creek, Humboldt County, *Chesnut & Drew*, Aug. 6, 1888; Horse Mountain, Humboldt County, *J. P. Tracy* 7670; Bartlett Trail to Preston Peak, Del Norte County, *Dudley*, July 6, 1899; Bear Wallows, 2 miles north of Sanger Peak, alt. 4500 feet, *Kildale* 8790; Klamath Range, near Preston Peak, *Jepson* 2878. A fragmentary specimen with only a few immature leaves, collected by C. B. Bradley at Scales Diggins, near Poverty Flat, Sierra County, seems referable to this species; but the material is too incomplete to make a definite determination.

TERATOLOGY IN WILLOWS

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The willows, in common with other plants, afford numerous instances of abnormal or teratological morphology. This may be shown by stems, leaves, aments, or flowers. Brief mention of a few may interest both professional and amateur botanists to observe others.

DIAMOND WILLOWS. The term is applied to stems in which the scars left by the atrophy of branchlets do not become overgrown by new tissue but remain and increase in size with the enlargement of the stem. In the more perfect specimens the resulting diamond-shaped depressions are regularly arranged on the stem according to the normal phyllotaxy. Some species of the American section *Cordatae*, especially *Salix lutea* of the Rocky Mountains and westward, are known to exhibit this phenomenon. In 1931 Professor W. A. Setchell of the University of California discovered that *Salix alaxensis*, the widely distributed tree willow of Alaska, also forms the diamond scars. He has presented to the writer a most beautiful cane made from a stem obtained among the Indians at Gulkana, and has given to the Department of Botany a small log section from a larger trunk.